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Resource Towns in the Mackenzie Basin

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Settlements vary in many ways and certainly by function and population size. In this paper, resource towns in the Mackenzie Basin are examined. Resource towns are established to house a labour force necessary to exploit a resource in a remote area. Consequently, their very existence is dependent on this industry — unless, of course, these centres take on other functions. In this paper, the resource towns in the Mackenzie Basin are examined from the perspective of changes in their population size. Such changes are considered within the framework of a population life-style model. The original life-cycle model for resource towns was developed by Lucas (1971) and later modified by others (Bradbury and St. Martins, 1983; Bradbury, 1984). While Lucas devised the life-cycle of resource towns to deal with planning issues, this model is modified to focus on three goals:

- To adapt the life-cycle model to focus on changes in population size
- To classify resource towns on the basis of changes in their population size
- To provide case studies of each type of resource town

THE REGION

The Mackenzie Basin is a sparsely populated area in northwestern Canada (Figure 1). This basin includes parts of three provinces (Alberta, British Columbia and Saskatchewan) and two territories (Northwest Territories and Yukon). In 1996, approximately 30 % of its half million inhabitants reside in eleven resource towns (Table 1).¹ At that time, resource towns comprised only 8 % of the 132 settlements found in this region.

Figure 1 The Mackenzie Basin

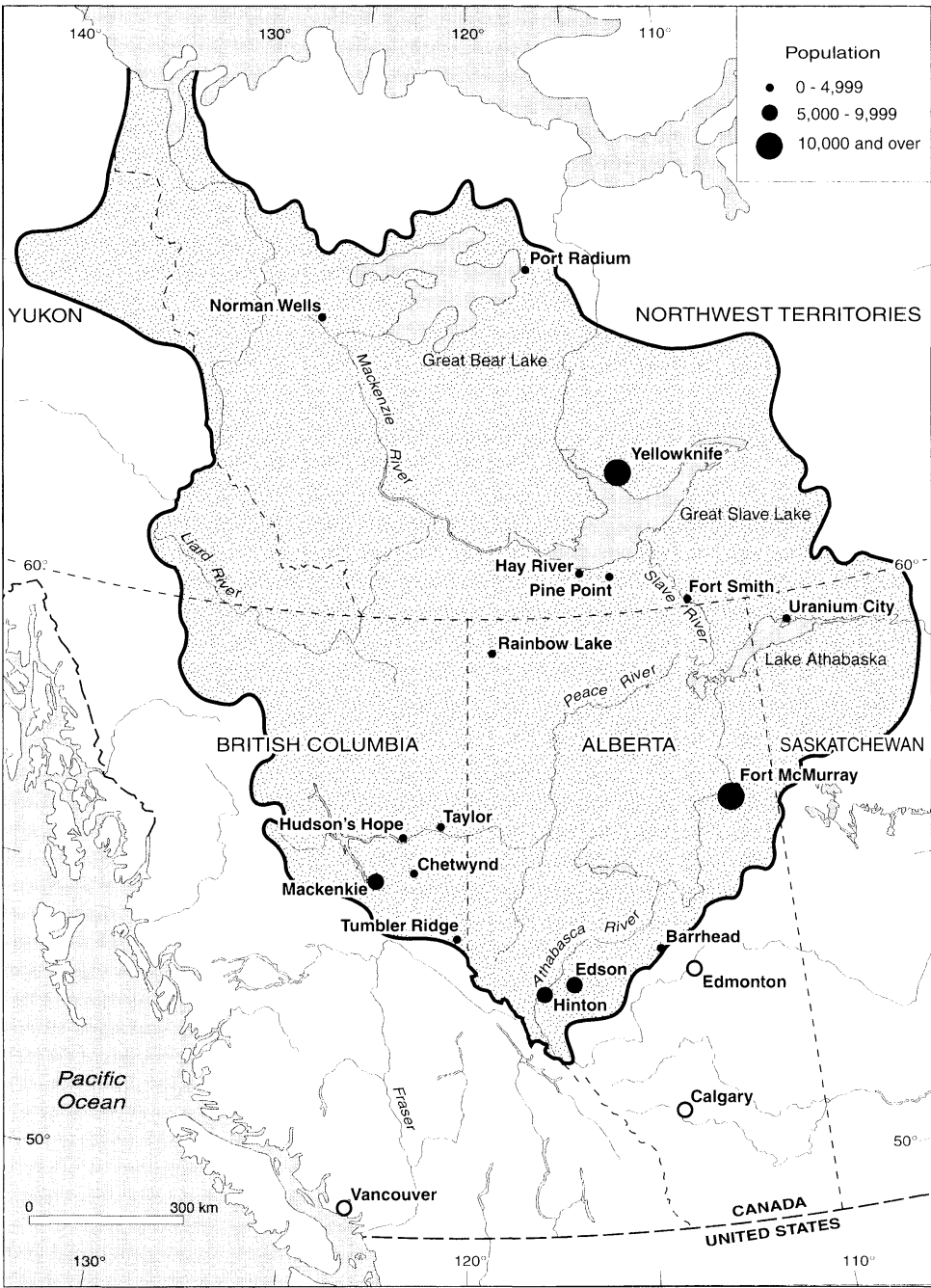


Table 1 Population of Resource Towns, 1991 and 1996

Resource Towns	Prov.	1991	1996
Pine Point	NWT	9	0
Norman Wells	NWT	627	798
Rainbow Lake	AB	817	1138
Taylor	BC	821	1031
Hudson Hope	BC	985	1122
Chetwynd	BC	2843	2980
Barrhead	AB	4160	4239
Tumbler Ridge	BC	4650	3775
Mackenzie	BC	5796	5997
Edson	AB	7323	7399
Hinton	AB	9046	9961
Ft. McMurray	AB	34 706	33 936
Total			

Source: Statistics Canada, 1997. Cat. 93-357-XPB.

LIFE-CYCLE MODEL

While many scholars have studied resource towns (Robinson, 1962; Seimen, 1976; Gill, 1989; Barnes and Hayter, 1992; Bowles, 1992; Clemenson, 1992; Randall and Ironside, 1996); Lucas, Bradbury and St. Martins focused their attention on a life-cycle model. Lucas (1971) concluded that there were four phases to resource towns: construction of a new town, control of the administration of the town by the company, transfer to town administration to an elected town council, and the out-migration of the children (now young adults) of mining employees because they cannot find work within the town. An important phase was added to this classic model by Bradbury/St. Martins (1983), namely the winding down of the town following the company's decision to close its mining operation.²

Most phases are based on decisions made by the company. In this paper, our attention is focused on changes in the population size of resource towns over the span of their existence. Changes in population size of resource centres provides a surrogate measure for resource production and other related economic activities plus a variety of public activities, such as education and health care services. Two factors stand out for utilizing a single measure, population size. One reason is that population size provides an overall measure of economic and employment changes occurring in a resource town due to a very close relationship between resource operations and the number of workers. The second reason is that this variable is available for all resources towns at different time periods, thereby facilitating a longitudinal approach. Table 2 illustrates the five hypothetical phases associated with a population version of the life-cycle model for resource towns.

Table 2 Population Life-cycle Model for Resource Towns

Phase	Population Characteristics	Associated Events
1	Uninhabited site	Company announces plans to build a resource town
2	Sharp increase in population size	With the completion of the construction of a company town, workers and their families arrive
3	Population size stable	Resource production reaches its peak and the demand for additional workers ceases
4	Sharp decrease in population size	Company decides to close its operations: workers and their families depart
5	Population size returns to zero	Company closes its mine and the town is abandoned

CLASSIFICATION OF RESOURCE TOWNS

Resource towns fall into four types (Table 3). "Boom-bust" towns follow the five phases outlined in Table 2. They have experienced the complete demographic cycle from rapid population growth to stability to population crash. Within the Mackenzie Basin, Pine Point represents a boom-bust town. The remaining three types of resource towns are described as towns of uncertainty, diversified towns and sustainable towns. Each has, in its own way, avoided the final phases of the population life-cycle.

"Towns of uncertainty" represent places where resource production remains their central function. Fort McMurray and Norman Wells fall into this category. Some such towns will follow the classic pattern shown in Table 2, but others may diversify. Diversified towns have gained a second economic function, thereby adding another dimension to its labour force, resulting in an increase in their population size. The fourth type of resource town is called a "sustainable town". Such communities are based on a renewable resource that, with proper management, ensures ongoing production and employment. Within the Mackenzie Basin, several communities, including Chetwynd, are based on the forest resource.

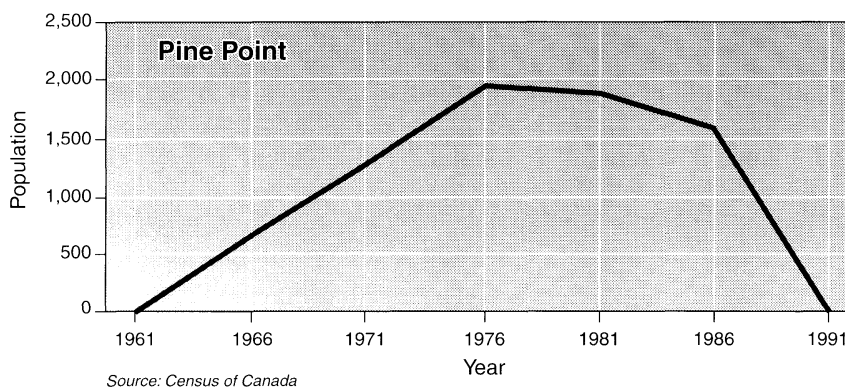
BOOM-BUST TOWNS

Classic boom-bust towns refer to those single-industry mining towns that have completed their population life cycle. From our investigation, such towns undergo three phases in their population growth over a relatively short period of time. It went through those phases (Figure 2). Pine Point had a short life-cycle. In the late 1950s, Cominco decided to develop a lead/zinc mine just south of Great Slave Lake. With the construction of the Great Slave Lake Railway, the project went ahead. Construction of the mine and town began in 1962. Production commenced in 1965. From 1962 to 1976, Pine Point witnessed unparalleled population growth (Figure 2).

This phase was followed by a period of slow population decline. When the company announced the closure of the mine in 1983, the future of the community was sealed. Shortly after 1986, the population of the community declined sharply when the miners and their families left the community. By 1991, only 9 persons were recorded as residing at Pine Point. Without the mine, Pine Point had no *raison d'être*. By 1996, it had become a ghost town.³

But why could Pine Point not diversify and maintain most of its population? One reason was its remote location and limited access to the outside world. Pine Point, while connected to the national highway and railway systems, had to compete with an established regional service centre, Hay River. Located less than 100 km from Pine Point, Hay River performed basic service functions for residents within the region long before Pine Point was established. Spatial inertia prevented Pine Point from developing similar functions.

Figure 2 Boom-Bust Towns



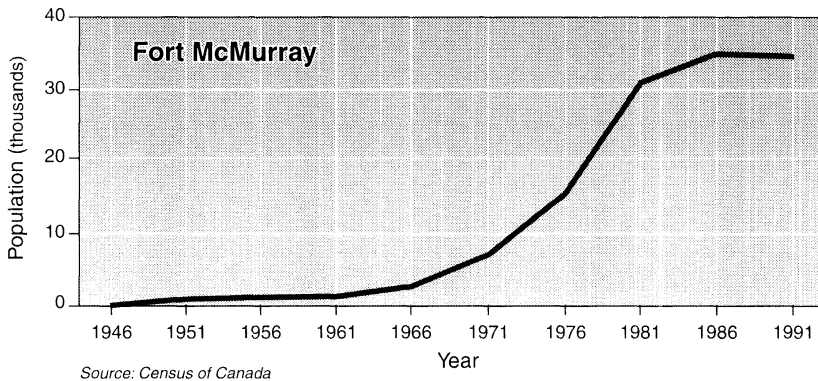
TOWNS OF UNCERTAINTY

Towns of uncertainty are single-industry mining towns in the early phase of their population life-cycle. They still have an opportunity to broaden their economic base. If successful, such centres could take on another economic life after the ore body is exhausted. Two examples are Fort McMurray in northern Alberta and Norman Wells in the Northwest Territories.

Located on the Athabasca River, Fort McMurray was an important river port for barge transportation on the Mackenzie River. After the building of a railway and highway to Hay River on the south shores of Great Slave Lake, its water transportation role greatly diminished. Until the development of heavy oil extraction in the early 1960s, Fort McMurray remained a sleepy back-water village. In the 1960s, Fort McMurray was transformed into the centre of oil extraction and process in Canada. By 1981, its population exceeded 30 000 and it now stands around 35 000 (Figure 3). Since 1986, however, its population has remained constant,

suggesting that the community has entered the third phase of the population life-cycle.

Figure 3 Towns of Uncertainty



Fort McMurray is far from other population centres, making it difficult for the town to develop a regional service role. If the heavy oil industry were to cease operations, Fort McMurray would undergo a dramatic downsizing. While its complex urban infrastructure is a decided advantage for its long-term survival, its location poses problems for diversification. The massive size of its heavy oil reserves and the technological advances leading to lower production costs suggest that this resource town's future is secure for the time being.

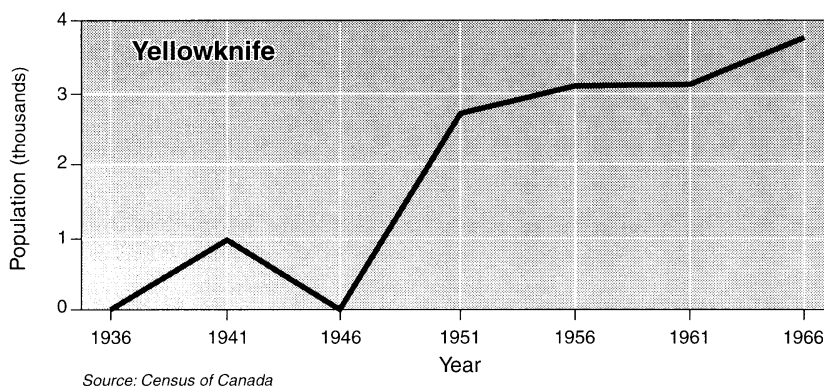
Further north, Norman Wells functions as a oil extraction centre for Esso Resources Canada Ltd. It has a very small population — less than 700 persons. When its oil reserves are exhausted early in the next century, its small size makes it vulnerable for closure. At that time, Esso Resources would reassign its employees to other sectors of its operations in Canada or elsewhere in the world. Because of its infrastructure, however, Norman Wells could remain as a small service centre. Since its housing stock and public infrastructure are much superior to those found in neighbouring Dene communities, Norman Wells could attract families from neighbouring settlements.

DIVERSIFIED TOWNS

Yellowknife represents an outstanding example of a mining town that diversified into a rapidly growing administrative and regional service centre. All of this became possible when Yellowknife was selected by Ottawa as the capital of the Northwest Territories. As a mining town, however, it suffered from the population fluctuations common to other such towns. In 1936, Yellowknife began its existence as an unplanned mining camp on the shores of Great Slave Lake. As shown in Figure 4, the town's population dropped dramatically after the federal government decided

that gold mining was a non-essential industry and reassigned the miners to tasks "essential" to the war effort. Immediately after World War II, Yellowknife again grew rapidly. From 1951 to 1961, this mining town entered a period of modest population growth which can be interpreted as the second population phase (Figure 4).

Figure 4 Boom-Bust Town



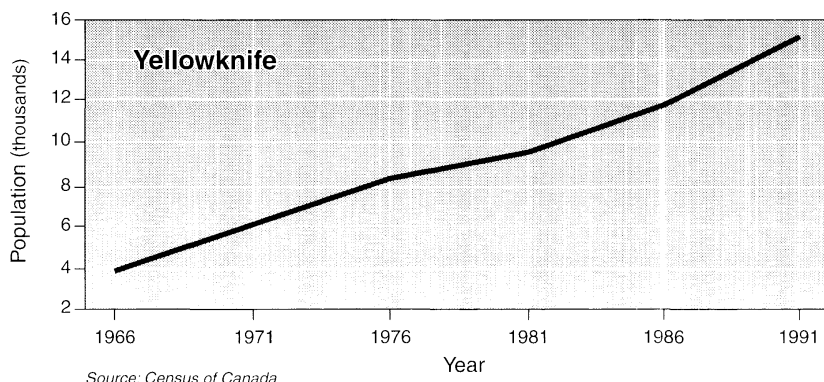
In 1967, Yellowknife embarked on an expanding economy and population. This change was due to the serendipitous event of being chosen as the capital of the Northwest Territories. Until that time, almost all the public agencies and departments serving the Northwest Territories were located in Ottawa and Fort Smith. With the selection of Yellowknife as the new capital, Ottawa transferred many federal units to Yellowknife, creating both a new service function and a large immigration of well-paid civil servants and their families. The spending power of these newcomers created the basis for larger construction and private service sectors. Also, Yellowknife has attracted many aboriginal families and individuals because of the prospects for employment and because of the wider range of urban amenities. Since 1967, Yellowknife has experienced a steady increase in its population (Figure 5).

In the future, Yellowknife faces both the possibility of business expansion and administration contraction. Economic expansion could come with the construction and then operation of one or more diamond mines near Lac de Gras, some 200 km northeast of Yellowknife. Because Yellowknife is ideally situated to serve as a labour and materials supply depot for such mines, a new influx of workers and their families is a strong possibility.

On the other hand, two dark clouds loom on its horizon. One is the possibility of the closure of its gold mines and the other is the division of the Northwest Territories in 1999 into two territories. The political division carries with it more powerful consequences for the city than does the end of gold mining, for it could

see the transfer of roughly one-third of the administrative functions now in Yellowknife to Iqaluit, the designated capital of Nunavut. The magnitude of this administrative transfer would have a severe impact on the population of Yellowknife not only because of the loss of administrators and their families but also because the secondary effects on the service sector of the economy. The net result could see a slowdown, even a reduction in Yellowknife's population.

Figure 5 Diversified Resource Town

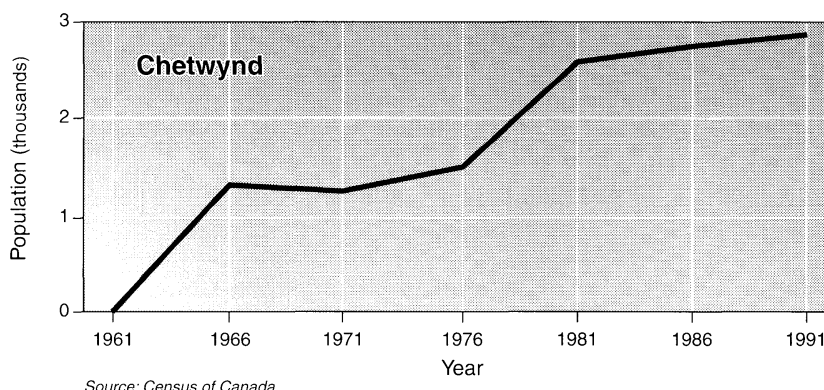


SUSTAINABLE TOWNS

Unlike mining towns, communities based on renewable resources do not face the inevitable exhaustion of their natural wealth. This difference between renewable and non-renewable resources represents a fundamental division among resource towns. With a sustainable resource management strategy, single-industry communities based on a renewable resource can avoid the relatively short life-cycle associated with most mining towns. In the Mackenzie Basin, forestry provides the foundation for such a sustainable economy.

Our examination of two industrial centres based on the forest resource towns confirmed this concept. In the two lumber towns of Chetwynd and Mackenzie, their population grew rapidly with the establishment of saw-milling firms and then stabilized (Figure 6). Another population surge could occur if further processing of timber occurs. Chetwynd provides an example of this second population surge following the construction of pulp and paper plant in the late 1970s (Figure 6). Based on the same wood resource but now utilizing trees unsuitable for lumber production and the waste products from sawmilling, the new mill had a sufficient raw material source. Sustainable resource towns, therefore, have the potential to expand their economy and thus undergo additional population surges.

Figure 6 Sustainable Resource Town



CONCLUSIONS

Resource Towns in the Mackenzie Basin do not follow a predictable pattern of population change over time.⁴ The classic pattern represented by one type of resource town (the boom-bust towns) follows the five phases outlined in the population life-cycle model. Other types of resource towns do not. The particular reasons vary but some are able to diversify their economies while other have the advantage of a renewable resource base which, with proper management, can maintain a community's population.

NOTES

- 1 From Table 1, two facts are self-evident. First of all, Fort McMurray is by far the largest centre. At the other end of the scale lies Pine Point, which by 1991, hardly qualified as an urban place. Mining operation had ceased in the late 1980s. By 1996, Pine Point had become a ghost town. During this time, Pine Point had passed through the wind-down and closure phases. Secondly, several resource towns have either disappeared or changed their principal functions and therefore are not listed in Table 1. Port Radium, for example, is a ghost town while Uranium city has lost its resource function. Yellowknife, on the other hand, has kept its gold mining function but, as the political capital of the Northwest Territories, it has acquired a more dominant function.

- 2 Normally, the decision by an industrial corporation to develop a resource is triggered by an expanding world market which pushes prices for raw materials upwards. Conversely, the shut-down process often results from a contracting world market which deflates prices for these primary products. However, the closure of an industrial mine or plant can result from other economic or natural forces. In the case of non-renewable resource, eventually the ore will be exhausted. But sometimes, the mining operation ceases well before that point. Frequently, the triggering factor is a sudden drop in price caused by the opening of a new mine with lower production and transportation costs. For Pine Point and Uranium City, it was more a case that their remaining ore was more expensive to mine than similar ore in newly opened mines. In some cases, such as the Faro lead/zinc mine in the Yukon, this process of opening and closing a mine repeats itself several times in accordance with world price for these primary products (Bone, 1992:100, 105). Such resource developments are on the edge of profitability and, as marginal firms, they are the first to close during an economic downturn.
- 3 Mine closure results in the end of a resource community but the community may not necessarily become a ghost town. Uranium City services is an example in the Mackenzie Basin. Established in 1952 by Eldorado Mining and Refining Company, Uranium City became the townsite for the nearby uranium mine. During its existence, this mining town underwent several booms, each driven by the rising price of uranium. Each time, its population size change accordingly. In 1981, Eldorado announced that the mine was no longer profitable and that it would close within six months. The effect on the town was catastrophic. Miners and their families left immediately, seeking jobs elsewhere. Within a year following the closure of the mine, Uranium City changed from a resource centre of 2000 inhabitants to a Native Settlement with about 150 persons. Diversification was not an option for Uranium City. It did perform a series of regional functions for the surrounding communities in northern Saskatchewan but with the loss of its population, these functions were no longer sustainable. Retail stores closed immediately followed later by public institutions including a high school, hospital and R.C.M.P. regional headquarters. Other examples may be found across the Canadian North. The mining town of Schefferville (Quebec) is now defunct but two small native settlements have arisen nearby — a Naskapi settlement of Kawawachikamach and a Montagnais settlement of Matimekoshe.
- 4 Randall and Ironside (1996:24-32) noted that resource towns are an extremely diverse group. They identified four areas — the degree of dependency, relative isolation, stability of employment, and the roles played by industrial sectors other than the dominant one.

ACKNOWLEDGEMENTS

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